FINAL ENVIRONMENTAL ASSESSMENT

Sherman Reservoir Motorboat Access Improvement
Nebraska Game and Parks Commission

October 2005

Prepared by

Nebraska Game and Parks Commission
and
U.S. Fish and Wildlife Service, Division of Federal Assistance

APPENDICES

PURPOSE AND NEED

Existing reservoirs, lakes and impoundments throughout Nebraska and the United States continue to be impacted by surrounding development and changes in adjacent land use practices. Many of Nebraska's lakes and reservoirs suffer from wind and wind generated waves that cause shoreline erosion. These impacts (sedimentation, shoreline erosion, loss of aquatic vegetation, loss of habitat, species alteration, etc.) have a long-term effect on the recreational opportunities at our existing reservoirs and impoundments. Specifically, boating and angling opportunities diminish which ultimately results in fewer boater/angler visits at these water bodies. The rehabilitation of existing water bodies is an important aspect of increasing or maintaining future fishing and recreational boating opportunities.

Sherman Reservoir is located in Sherman County, approximately five miles northeast of Loup City, Nebraska. The legal description of the dam structure is Section 2, Township 15N, Range 14W. Sherman Dam was constructed and completed by the United States Bureau of Reclamation (BOR) in 1962 and the reservoir functions for irrigation, recreation, and very limited flood control. The dam structure is operated by the Loup Basin Reclamation District, which releases irrigation water to the Farwell Irrigation District. The Nebraska Game and Parks Commission is responsible for management of wildlife and fisheries at Sherman Reservoir as a part of the transfer of title from the Bureau of Reclamation to the Loup Basin Reclamation District.

Sherman Reservoir is an off-stream storage facility that provides storage of Middle Loup River flows for release during the irrigation season. Water is diverted from the Middle Loup River at the Arcadia Diversion Dam and flows 19 miles through the Sherman Feeder Canal (850 cubic feet/second capacity) to Sherman Reservoir. The Farwell canal and lateral delivery system below Sherman Reservoir supply irrigation water for about 60,000 cropped acres. Because the Middle Loup River carries a high concentration of silt, the headwork structure for the Sherman Feeder Canal was designed with a silt diverter to remove as much silt from the water as possible.

Sherman Reservoir has a surface area of approximately 2,845-acres at the conservation pool elevation of 2,162 feet M.S.L. (Mean Sea Level), with a shoreline length of approximately 65 miles. Total controlled capacity at conservation pool is about 69,000 acre-feet, with a reservoir bottom elevation of 2,139 feet (MSL). The drainage system around Sherman Reservoir contains the Middle Loup River, Turkey Creek and Oak Creek. Sherman Dam is located on Oak Creek, which is normally dry except for heavy runoff periods. The contributing drainage area above the reservoir is 37 square miles. The reservoir is approximately five miles long with moderately steep drainage ways branching off the main reservoir, creating many coves, bays, and miles of irregular shoreline. The public land surrounding Sherman Reservoir provides nearly 4,700 acres for wildlife and land-based recreation.

While shoreline angling opportunities do exist at Sherman Reservoir, historically motorboat angling pressure has far exceeded that of bank angling. Many of the main points and popular coves throughout the reservoir are only accessible by boat. Without the improvement and protection of these coves, motorboat access to these popular angling locations will continue to diminish and become unusable.

Annual water releases for irrigation operation from Sherman Reservoir cause significant water level reductions in the reservoir. Since 1964, annual water elevation reductions have ranged from 7-37 feet, with an average of 16.6 feet per year. Shortly after the irrigation season, reservoir water levels are increased to an elevation of about 2,155 feet M.S.L. for winter storage. The reservoir is then filled to conservation pool (2,162 feet M.S.L.) starting about mid-April of the next year. Water level reductions result in more extensive shoreline erosion and loss of boating area and shallow water fish habitat. All terrestrial vegetation that was inundated becomes dry or

de-watered, and with extreme water fluctuation rates, very little aquatic vegetation becomes established. Recruitment of shoreline-oriented fish species is negatively affected by this water level scenario. With water level reductions over 15 vertical feet, boat access on the reservoir is severely limited during various times of the year.

Many factors contribute to extensive shoreline erosion at Sherman Reservoir. Irregular shoreline, annual water level reductions, long wind fetches, and highly erodible soil types all contribute to Sherman Reservoir's shoreline erosion problem. Most small cove and bay habitats off the main reservoir have been filled from erosion resulting in large amounts of very shallow water with poor connection to deeper water areas. As a result, small bays and coves off the main reservoir contain water only when the reservoir is near conservation pool, and provide virtually no aquatic habitat for sport fish and boat fishing anglers. Main reservoir points have also been severely eroded and they contribute to the extensive shallow water or mud flats in the reservoir. These main point erosion locations also reduce motorboat connections to many of the larger cove habitats.

A Sport Fish Restoration grant is intended to assist with the restoration for motorboat access development including measures such as wind breakwater structures; improvements to the existing boat launch; selected lake deepening in the vicinity of the existing boat ramp and high boat-use bays and coves.

An aerial photo of the Sherman Reservoir area is included as Appendix A along with the construction plans.

ALTERNATIVES

Alternative A (Preferred)

The NGPC (Nebraska Game and Parks Commission) is addressing motorboat access improvements and aquatic habitat restoration efforts as part of the overall rehabilitation plan at Sherman Reservoir. Due to the large size of the reservoir and limited site access, the overall project has been broken down into restoration sites. A design plan (see attached design drawings) has been prepared for both motorboat access improvements and aquatic habitat restoration measures at Sherman Reservoir. Only sites to be improved through the motorboat access grant are described (Site 2, 5, 6, and 7). Aquatic habitat restoration work will be outside the grant and those sites (3 and 4) are excluded in this environment assessment project description.

1. Mobilization/Demobilization. Contractor mobilization costs for construction.

2. Site 2 Breakwater Combination. The wind breakwater will provide wind and wave attenuation, which will benefit boat access.

3. Site 2 Breakwater. This breakwater will provide wind and wave attenuation to help protect coves from continued sedimentation and siltation.

4. Site 2 Excavation. Sediment will be removed from the cove at Site 2 to improve boating angler access to cove habitat fishing. Excavation will also prevent the cove from becoming inaccessible from the main body of the lake due to siltation at the cove's mouth.

5. Site 5 Breakwaters. These breakwaters will help protect the marina cove from wind and wave action. They will provide benefits by protecting the boat ramp during unloading and loading of motorboats.

This is the main boat ramp facility on the reservoir. Also, one of the breakwaters will have a concrete top and connecting walkway to the boat ramp and parking lot for ADA accessibility.

6. Site 5 Excavation. Excavation in the marina cove will improve boating access to the cove.

7. Site 6 Breakwater. This breakwater will provide wind and wave attenuation to help protect the cove at Site 6 from continued siltation.

8. Site 6 Breakwater. The breakwater structure will provide wind and wave attenuation and arrest eroding shoreline. Limiting shoreline erosion will minimize continued cove siltation that threatens to block boat angler cove access.

9. Site 7 Breakwater. This breakwater will protect the cove from wind and wave action which has caused sedimentation and loss of depth in the cove.

10. Site 7 Excavation. The excavation of sediment from this cove will improve boat angler access to cove fishing. Excavation will also prevent the cove from becoming inaccessible from the main body of the lake due to siltation at the cove's mouth.

11. Security Light (Site 5). This light will provide for safety by illuminating the proposed breakwaters. The light will be a vandal proof type. The fixture will be mounted on the top of a pole that will be located at the end of the jetty south of the boat ramp.

Sherman Reservoir Motorboat Access Improvements

Site Description	Quantity
Site 2	
Construct Perpendicular Breakwater 2A	400 ft
Construct Breakwater 2B/2C	900 ft
Excavation 2EXC1	60,800 cy
Site 5	
Construct Perpendicular Breakwater 5A	200 ft
Construct Perpendicular Breakwater 5B	420 ft
Site 6	
Construct Breakwater 6A	920 ft
Construct Breakwater 6B	1050 ft
Construct Perpendicular Breakwater 6C	460 ft
Excavation 6EXC1	20,000 cy
Excavation 6EXC2	20,000 cy
Site 7	
Construct Breakwater 7A/7C	1025 ft
Construct Breakwater 7B	650 ft
Construct Perpendicular Breakwater 7D	100 ft
Excavation 7EXC2	20,000 cy
Excavation 7EXC3	20,000 cy

Alternative B (No Action)

The aquatic habitat rehabilitation project at Sherman Reservoir would proceed without motorboat access improvements. No motorboat grant funds would be used.

Discussion and Selection of Preferred Alternative

Construction of the motorboat access projects described in Alternative A will be cost efficient and beneficial to motorboat access for boating and fishing as well as the overall reservoir renovation. If the motorboat access improvements are not constructed at the same time as the aquatic habitat rehabilitation, construction cost will increase substantially and would result in reservoir disturbance at the time of the aquatic habitat project and again with future motorboat access improvements. Construction of both the motorboat access improvements and the aquatic habitat rehabilitation during the same construction timeline will create the least disturbance, be the most cost efficient, and provide the greatest benefit to the habitat, species, and boaters. Angler use at Sherman Reservoir is predominantly from boat anglers due to the size of the reservoir and limited shoreline access. If motorboat access improvements are not accomplished, motorboat access for anglers will further decline and be lost entirely. Consequently, Alternative A is chosen as the preferred action.

AFFECTED ENVIRONMENT

PHYSICAL ENVIRONMENT

Location

Sherman Reservoir is located in Sherman County, approximately five miles northeast of Loup City, Nebraska along the Middle Loup River. The legal description of the dam structure is Section 2, Township 15N, Range 14W. The dam impounds water with a surface area of approximately 2,878 acres, with an additional 4,721 acres of recreational and wildlife lands surrounding the dam.

Soils

Soils in the immediate project area are in the Uly, Coly, Holdrege association. The area surrounding the reservoir and project sites include CuD and CuE soils are Coly-Uly silt loams ranging from 6 to 17 percent slopes; UcF, Uly-Coly silt loams at 15 to 30 percent slopes.

Water Resources and Water Quality

The Middle Loup River is a Sandhill stream, typical of rivers in similar agriculturally impacted areas of the Great Plains grassland ecosystem. It is relatively shallow with sandy bottoms, low current velocities, and impacted by strong rain events. Middle Loup River is the main source of reservoir water via the 19-mile long Sherman Feeder Canal from the Middle Loup at the Arcadia Diversion Dam to the reservoir.

Floodplain and Hydrology

Habitats in the Middle Loup River are typical of rivers in similar agriculturally impacted areas of the Great Plains grassland ecosystem. It is relatively shallow with sandy bottoms, low current velocities, and impacted by strong rain events. The Middle Loup River's annual flow and temperature regime is more moderate than that of other rivers in the area owing to the hydrologic characteristics of the Sandhills at its headwaters. The Sandhills sandy soils allow for faster infiltration and less episodic runoff reaching the river and more rapid groundwater recharge of the river to supplement periods of low flow. Planned annual water releases from reservoirs, like Sherman Reservoir, are dependent on irrigation demand, typically reduced in the fall, winter, and early spring to store water in reservoirs and decline late spring and summer according to irrigation needs and releases.

FISH, WILDLIFE, and PLANTS

Wetlands

Based on an examination of National Wetland Inventory maps, wetlands found in the area of the Sherman Reservoir Lake Restoration Project structures (breakwaters and excavation sites) are classified as being either a palustrine system, forested, and with a seasonally-flooded (PFOCh) water regime, or lacustrine, limnetic with an unconsolidated bottom and a permanently flooded water regime (L1UBHh). Both have the diked/impounded special modifier (h). These wetlands were created by construction of the Sherman Reservoir dam. Breakwaters constructed at Sites 2, 3, 4, 5, 6, and 7 will be located primarily within the drawdown zone of the reservoir. The drawdown zone is primarily open mud flat that dries in late summer, fall and winter. Small clumps of willows and cottonwood trees growing at the edge of the conservation pool account for the forested class. The new breakwaters will be entirely, or mostly submerged at normal conservation pool and exposed during normal winter pool. Excavation Sites 2EXC1, 6EXC1, 6EXC2, 7EXC2, and 7EXC3 are located within the lacustrine zone below the conservation pool.

Overall, the breakwater structures will enhance wetland habitat at Sherman Reservoir. The quiet, wave-free environment behind the breakwaters will allow the establishment of emergent wetland vegetation (e.g. cattails, rushes) to occur where none exists now. The excavation areas will remain lacustrine systems due to being inundated year-round. However, at winter pool, portions of the excavation sites will provide shallow water habitat with depths of only 1-3 feet. See Appendix B for wetland inventory data.

Habitat and Vegetation

The Sherman Reservoir is located in the Loess Mixed Prairie area. The immediate project area is in previously disturbed soils and vegetation includes introduced and native species. This area is part of the Mixed Grass Prairie which occurs on steep to nearly level slopes in level, rolling, and dissected loess plains. Soils are deep silt loams formed in loess, and are moderately to rapidly well-drained.

Vegetative cover is dominated by a mixture of tall grasses and mid grasses, often with an understory of short grasses. Introduced species of brome and Kentucky blue grass are common. Predominant native species are little bluestem, sideoats grama and big bluestem on slopes; lower slopes and draws big bluestem, sideoats grama, and western wheatgrass. (Terrestrial Natural Communities of Nebraska, Nebraska Natural Heritage Program, 2003, G. Steinauer, S. Rolfsmeier.)

Wildlife and Fish
Crappie (*pomoxis*) and walleye (*Stizostedion vitreum*) are the predominant sport fish species at Sherman Reservoir. Walleye, Channel Catfish (*Ictalurus punctatus*), and Crappie dominate the fish community. A complete list of fish species historically sampled in the Loup Basin is attached (Appendix C) although only a few of the species are found within the reservoir proper.

There are numerous mammal, bird, reptile, and amphibian species in the area. Common species include white-tailed deer (*Odocoileus virginianus*), turkey (*Meleagris gallopavo*), dove (*Zenaida macroura*), grouse (*Tympanuchus phasianellus*), pheasant (*Phasian colchicus*), cottontail rabbit (*Sylvilagus Floridanus*), racoon (*Procyon lotor*), beaver (*Castor canadensis*), great blue heron(*Ardea herodias*) , green heron (*Butorides virescens),* egrets, least sandpiper (*Calidris minutilla*), blue-winged teal (*Anas discors*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), and Mottled Duck (*Anas fulvigula*). Typical grassland species for the area include smooth brome, Kentucky bluegrass, blue grama, western wheatgrass, sideoats grama, little bluestem and big bluestem.

Federal Proposed, Candidate, Threatened, and Endangered Species

All Federally listed species were considered in this evaluation. A current list of federally listed threatened or endangered species and candidate species whose ranges are within Sherman County area in the vicinity of the Sherman Reservoir project area are:

Common Name	Scientific Name	State Status	Federal Status
BIRDS - Species			
Whooping Crane	*Grus americana*	Endangered	Endangered
Bald Eagle	*Haliaeetus leucocephalus*	Threatened	Threatened
MAMMALS - Species None			
INSECTS - Species None			
PLANTS - Species			
Western Prairie Fringed Orchid	*Platanthera praeclara*	Threatened	Threatened

Threatened or Endangered Species

Bald Eagle - Bald eagles are large, opportunistic birds of prey that feed largely upon fish and waterfowl. Eagles tend to use rivers, lakes, and reservoirs where large trees provide perch sites for roosting and for locating and securing prey. Fish are the primary source of food. Under adverse conditions, bald eagles will search for prey in upland areas and feed on carrion. If severe conditions persist, eagles concentrate in areas of open water or

migrate further south. Nesting and wintering eagles are found in close association with water that provides a reliable food source and isolation from human activities. Bald eagles wintering in Nebraska are thought to originate in the central provinces of Canada and the Great Lake States. Migrant and wintering eagles begin to arrive in the Loup River basin in early to mid-October and begin to leave for breeding areas in the north by late March (NGPC, 1993a). Adult migrants tend to winter in the same area but remain mobile when seeking food during changing winter weather conditions. Wintering and migrating eagles can be expected to occur along both the Middle Loup and Loup Rivers (FWS, 2001b).

Bald eagles nest near rivers, lakes, and reservoirs where they select sites free from disturbance. Cottonwood trees are preferred nesting trees in the Loup River basin. Nests are large and re-used annually. Nesting activities begin in mid to late March, eggs are laid in late March to early April, and both adults incubate the eggs (NGPC, 1993a). Eggs hatch in mid-May, and fledging takes place after 10 to 11 weeks, with immature birds remaining near the nest for another 6 weeks (NGPC, 1993a).

The number of active bald eagle nests is increasing in Nebraska. Active bald eagle nests are located along the Middle Loup River in the vicinity of Rockville and along the Loup River west of Columbus (FWS, 2001b). The bald eagle is listed as threatened and has been proposed for de-listing.

Whooping Crane - The whooping crane is one of the rarest North American birds and is the tallest North American bird (approximately 5 feet when standing erect). Its wingspan approaches 8 feet. The breeding population nests in Wood Buffalo National Park in the Northwest Territories and winters in Aransas National Wildlife Refuge and along the Gulf Coast of Texas (Lewis, 1995). Whooping cranes are known to migrate through central Nebraska and use portions of the Platte River between Kearney and Grand Island during their spring and fall migrations (NGPC, 1994). Cranes roost overnight on exposed bars or in shallow water on submerged bars and spend their days foraging for invertebrates, roots, tubers, and small grains in adjacent wet meadows and agricultural fields. The whooping crane is a regular spring (March-April) and fall (October-November) migrant through the Loup River basin where they use wetlands, open agricultural fields, and grasslands that provide open views of the surrounding terrain and are isolated from human disturbance (NGPC, 1994).

Numerous whooping crane sightings have been confirmed on and along the Middle Loup River between the Milburn diversion dam and St. Paul (FWS, 2001b). No whooping crane use has been confirmed on the Loup River downstream from its confluence with the North Loup River (FWS, 2001b). These visits are normally short-lived, ranging from 2 to 3 days. Collision with power lines is the primary known cause of death for whooping cranes (Lewis, 1995). The frequent stopovers necessary along their migration route have become increasingly hazardous as more land is developed for agriculture, industry, and housing. Suitable resting sites along their migration routes decrease over time. The whooping crane is listed as endangered.

Western Prairie Fringed Orchid -The western prairie fringed orchid is a relatively tall, perennial plant occurring in swales and along the low edges of slopes in native tallgrass prairie. In eastern Nebraska, the orchid occurs in mesic upland prairies in glacial drift and calcium-rich loess soils (NGPC, 1993b). In central and northeast Nebraska, it occurs in wet-mesic prairies and sedge meadows in alluvial soils of river flood plains (NGPC, 1993b). In the Sandhills of central and western Nebraska, the orchid occurs in the sandy soils of sub irrigated meadows and prairie swales (NGPC, 1993b). All sites are typified by tallgrass prairie habitat and abundant soil moisture. Populations of the western prairie fringed orchid are found primarily in high- to moderate-quality, unplowed prairies.

The major limiting factor for the western prairie fringed orchid is its dependency upon the limited habitat of mesic to wet-mesic tallgrass prairie (NGPC, 1993b). Long-term survival requires sites where near-surface groundwater maintains a relatively high and consistent level of saturation. Wetland drainage, stream channelization, ditching, and pumping from shallow aquifers pose threats to the orchid by depleting groundwater and reducing soil moisture. Reduced or interrupted streamflows also pose a threat through drying of adjacent meadows (NGPC, 1993b).

Historical records indicate the range of the western prairie fringed orchid lies primarily to the east and south of the Loup River basin (FWS, 1997). There are scattered populations in Loup County along the Middle Loup River (Jobman, 2001a). In addition, there are a number of populations in northeast Garfield County and along the Cedar River drainage (Jobman, 2001a). The western prairie fringed orchid is listed as threatened.

HUMAN ENVIRONMENT

Cultural, Historical, and Archeological Resources

A cultural and historic review was conducted in 2002 as part of a previous Environmental Assessment to transfer title of Sherman Reservoir area to the Sargent Irrigation District from the Bureau of Reclamation. Nine sites on the transfer area were listed on the National Register of Historic Places. One site (25SM20) is located at Sherman Reservoir and eight sites are located at Arcadia Diversion Dam. The University of Nebraska State Museum has entered into an agreement with the Irrigation District to provide oversight, excavation, and expertise in management of the archaeological resources as needed at Sherman and Arcadia.

Subsequent review by the State Historic Preservation Office (SHPO) dated March 22, 2005 for this project verified that no significant cultural resources would be impacted by the proposed work.

Socioeconomic Resources

The reservoir provides water resources for agricultural irrigation. The motorboat access project will not impact available irrigation resources. The Sherman Reservoir currently provides recreational opportunity and subsequent income from individuals using the area. Typical recreation activities include recreational boating, boat fishing, bank fishing, hunting, and camping. Annual use is estimated at 87,600 hours of angling at Sherman Reservoir between April and September from 1996 through 2001.

ENVIRONMENTAL CONSEQUENCES

Alternative A (Preferred)

PHYSICAL ENVIRONMENT

Soils

Soils in the immediate project area were disturbed during construction of the original reservoir. This project work will entail construction of breakwaters and removal of soil from the reservoir shorelines and coves to improve motorboat access. There are no prime or unique farmlands on the project area.

Excess spoil (excavated material) will be placed on selected upland areas. The material will be spread, graded, sloped, and seeded to meet the existing topography of the area. The spoil will be distributed in non-wetland areas.

Vegetation and mulch will be specified in final construction specifications. Specifications typically state the "use of state approved seed of the latest season's crop with guaranteed analysis of for percentages of mixture, purity, germination hard seed, and weed seed content and inert material. Labels shall be in conformance to AMS-01 and applicabable State seed laws.

Water Resources and Water Quality

Construction will occur during low-water periods and will not cause sediment and turbidity to the down stream water resources.

By arresting shoreline erosion the project will minimize active in-lake turbidity and improve overall water quality within the reservoir.

Floodplain and Hydrology

Construction will occur during low-water periods and will not impact floodplain. Impact on hydrology will be minimal due to timing of construction during low-water periods. Reservoir operations will be maintained at pre-agreed water elevations to ensure continued reservoir use.

The Planning and Zoning Department of Sherman County was contacted in regards to floodplain permitting for the restoration project. Sherman County does not have floodplain mapping. Therefore, no floodplain permit is required for the rehabilitation project.

FISH, WILDLIFE, AND PLANTS

Wetlands

Based on an examination of National Wetland Inventory maps, wetlands found in the area of the Sherman Reservoir Lake Restoration Project structures (breakwaters and excavation sites) are classified as being either a palustrine system, forested, and with a seasonally-flooded (PFOCh) water regime, or lacustrine, limnetic with an unconsolidated bottom and a permanently flooded water regime (L1UBHh). Both have the diked/impounded special modifier (h). These wetlands were created by construction of the Sherman Reservoir dam. Breakwaters constructed at Sites 2, 3, 4, 5, 6, and 7 will be located primarily within the drawdown zone of the reservoir. The drawdown zone is primarily open mud flat that dries in late summer, fall and winter. Small clumps of willows and cottonwood trees growing at the edge of the conservation pool account for the forested class. The new breakwaters will be entirely, or mostly submerged at normal conservation pool and exposed during normal winter pool. Excavation Sites 2EXC1, 6EXC1, 6EXC2, 7EXC2, and 7EXC3 are located within the lacustrine zone below the conservation pool.

Overall, the breakwater structures will enhance wetland habitat at Sherman Reservoir. The quiet, wave-free environment behind the breakwaters will allow the establishment of emergent wetland vegetation (e.g. cattails, rushes) to occur where none exists now. The excavation areas will remain lacustrine systems due to being

inundated year-round. However, at winter pool, portions of the excavation sites will provide shallow water habitat with depths of only 1-3 feet.

Habitat and Vegetation

The proposed construction of the breakwaters and excavation will occur within the existing reservoir conservation pool. Existing vegetation consists of periodic, small clumps of willows and cottonwood trees that have grown up during low water conditions. Very little aquatic vegetation is established in the construction area due to water elevation fluctuations, and active erosion. The majority of excavated material from the reservoir will be used to create breakwaters and protected with rock riprap. Excess material will be spoiled within the surrounding uplands, graded and seeded to reestablish upland vegetation.

Following construction, reservoir depths will be re-established. Aquatic habitat activities will benefit fish and wildlife habitat by improving habitat available for fish and wildlife species.

A unique vegetation review was conducted on Nebraska Game and Parks Commission areas and confirms that no at-risk plant species are in the impacted area. (1999 Wildlife Management Areas, Threatened and Endangered Species Inventory, Final Report, NGPC, Robert Steinauer).

Wildlife and Fisheries

Reservoir improvement will have minimal impact on aquatic and non-aquatic species. Water levels will be reduced gradually during irrigation season, as historically happens. Annual water releases for irrigation since 1964 range from 7 to 37 feet, with an average of 16.6 feet per year. Restoration for motorboat access development will occur at Site 2, 5,6, and 7 with the order of construction to be determined by the engineer and contractor. Restoration will occur during low water periods with minimal impact to species.

Under the Migratory Bird Treat Act (MBTA) (16 U.S.C. 703-712: Ch.128 as amended) construction activities in grassland, wetland, and woodland habitats and those that occur on bridges (e.g., which may affect swallow nests on bridge girders) that would otherwise result in the taking of migratory birds, eggs, your, and/or active nests should be avoided. Although the provisions of the MBTA are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period April 1 to July 15. However some migratory birds are known to nest outside of the aforementioned primary nesting season period. If the proposed construction project is planned to occur during the primary nesting season or at any other time which may result in the take of nesting migratory birds, the USFWS recommends that the project proponent arranged to have a qualified biologist conduct a field survey of the affected habitats and structures to determine the absence or presence of nesting migratory birds. (April 28, 2005 correspondence from Steve Anschutz).

Federal Threatened, Endangered, Proposed and Candidate Species

The project site is located within the range of the Western Prairie Fringed Orchid, bald eagle, and whooping crane. No known occurrences have been recorded of any state listed threatened or endangered species in the vicinity of the project site. Habitat and vegetation at the project site are not suited to these species.

No Federal or State threatened, endangered, proposed or candidate species are present in the project; therefore, no impacts will occur. (Troy Rahmig, NGPC Environmental Analyst, March 14, 2005.) The USFWS, Ecological Service Nebraska Field office concurs that the proposed project will have no effect on federally listed threatened and endangered species or their designated critical habitat. (Steve Anschutz, Nebraska Field

Supervisor, April 28, 2005). As always, re-initiation of consultation with the Service will be required under section 7(a) of the Endangered Species Act of 1973, as amended if the proposed action is changed in any way.

HUMAN ENVIRONMENT

Cultural, Historical, and Archeological Resources

No significant cultural or historic resources are known to exist in the project area; therefore, no impacts will occur. (Nebraska State Historic Preservation Office, March 22, 2005)

Socioeconomic Resources

Project construction will be conducted without impact to irrigation and agricultural resources. Some recreation use of the area may be interrupted during construction. However, recreational boating and fishing will benefit from restored habitats.

Alternative B - No Action

Under Alternative B, the motorboat improvement project as described in Alternative A will not be constructed. Since no federal funds will be used in the construction of the aquatic habitat restoration, no federal review will be required for the project development. The motorboat improvements would not be constructed and benefits would not be realized.

Habitat and Vegetation

The environmental consequences on habitat and vegetation will be the same as Alternative A.

Soils

The environmental consequences on soils will be the same as Alternative A.

Floodplain and Hydrology

The environmental consequences on floodplain and hydrology will be the same as Alternative A.

Federal Threatened, Endangered, Proposed and Candidate Species

The environmental consequences to Federal Threatened, Endangered, Proposed and Candidate Species will be the same as Alternative A.

Cultural, Historical, and Archeological Resources

The environmental consequences to cultural, historical, and archeological resources will be the same as Alternative A.

Socioeconomic Resources

The environmental consequences will be the same as Alternative A.

Water Resources and Water Quality

The environmental consequences for water resources and water quality will be the same as Alternative A.

Environmental Consequences Matrix

The following matrix was developed to compare the environmental consequences of the two alternatives and aid in selecting the preferred alternative.

Environmental consequences for the two proposed alternatives:

Component	Alternative A	Alternative B
Vegetation types	Benefit reestablishment of diversity of vegetation types.	Benefit reestablishment of diversity of vegetation types.
Topography and Soils	Benefit by rebuilding and arresting shoreline erosion of soils to maintain reservoir depth.	Benefit by rebuilding and arresting shoreline erosion of soils to establish aquatic vegetation.
Wetlands	Benefit to wetland vegetation.	Benefit to wetland vegetation on specific sites.
Hydrology and Floodplains	No effect.	No effect.
Wildlife and Fisheries	Primary benefit to motor boat use. Secondary benefit to fish and wildlife species.	Benefit to wildlife and fish species through habitat restoration.
Endangered Species	No effect.	No effect.
Archaeological, Cultural and Historical Resources	No effect.	No effect.
Socioeconomic resources	Benefit through increase use for motorboat access and maintain future use for motorboat access.	Benefit recreational fisheries use of area.
Water quality	Benefit water quality through shoreline stabilization and deepening.	Benefit water quality through shoreline stabilization and deepening.
Public opposition	None anticipated. Public hearing scheduled September 7, 2005.	None anticipated. Public hearing scheduled September 7, 2005.

PUBLIC INVOLVEMENT

The proposed motorboat access improvement at Sherman Reservoir was discussed at a public meeting scheduled in Loup City, Nebraska September 7, 2005. Thirty interested citizens attended the meeting. A copy of the Draft Environmental Assessment was distributed to the attendees. A one hour presentation previewing the project and scope of work was presented. A thirty minute question and answer session followed the presentation. No negative comments were received from the attendees. Several comments in support of the project were presented.

The project was approved by the Nebraska Game and Parks Commission, Board of Commissioners and the Natural Resources Committee of the Nebraska Legislature. NGPC Commission meetings and legislative sessions are published in the Lincoln Journal Star (statewide distribution). No negative comments were received.

A Public Notice of the availability of the Draft EA was published by the US Fish and Wildlife Service, Region 6, Denver, Federal Assistance Office in area legal newspapers not later than September 19, 2005 requesting comment on the proposed alternatives expiring October 3, 2005. The Draft EA was also available for review at the following address: http://mountain-prairie.fws.gov/federalassistance/. A total of 13 responses in support of the project were received. No opposing comments on the project were received.

CONSULTATION AND COORDINATION

The following individuals and organizations have provided input to this environmental assessment.

U.S. Fish and Wildlife Service P O Box 25486 Denver, CO 80225	David McGillivary – Federal Assistance Jacquie Richy – Federal Assistance Otto Jose – Federal Assistance Steve Anschutz – Ecological Services
Nebraska Game and Parks Commission P. O. Box 30370 Lincoln, NE 68503	Rick Schneider, Randy Stutheit, Steve Satra, Troy Rahmig, Brad Newcomb

References:

Newcomb, Brad, Fisheries Division, Kearney, Nebraska, Nebraska Game and Parks Commission, Sherman Reservoir Aquatic Habitat Project Proposal, December 2002.
Final Environmental Assessment, Department of the Interior, Bureau of Reclamation, Great Plains Region, Billings, Montana, Nebraska-Kansas Area Office, Grand Island, Nebraska
G. Steinauer, S. Rolfsmeier, Terrestrial Natural Communities of Nebraska for the Nebraska Natural Heritage Program

APPENDIX A

Plan sheets

APPENDIX B

Wetland Index

APPENDIX C

Fish Species List

APPENDIX D

Anschutz Letter

APPENDIX E

Troy letter

APPENDIX F

SHPO letter